**ABSTRACT**

The present invention is a key conversion system for deterministically and reversibly converting a first key value of a first communications system into a second key value of a second communication system. For example, the key conversion system generates a first intermediate value from at least a portion of the first key value using a first random function. At least a portion of the first intermediate value is provided to a second random function to produce a second value. An exclusive-or is performed on at least a portion of the first key value and at least a portion of the second value to generate a second intermediate value. At least a portion of the second intermediate value is provided to a third random function to produce a third value. By performing an exclusive-or on at least a portion of the third value and at least a portion of the first intermediate value, the key conversion system produces at least a first portion of the second key value, and at least a second portion of the second key value is produced as the second intermediate value. The key conversion system is reversible or bi-directional in that, if the wireless unit is handed off back to the first communications system, the second key value of the second communications system is converted back to the first key value of the first communications system. For example, the key conversion system provides the at least second portion of the second key value to the third random function to produce the third value. The first intermediate value is generated by performing an exclusive-or on the first portion of the second key value and the third value. Using the second random function, the key conversion system generates the second value from the first intermediate value and produces at least a portion of the first key by performing an exclusive-or on the second value and the second portion of the second key value.